



# Kansas City 8-Hour Ozone Maintenance Plan

Thomas Gross  
Kansas Department of  
Health and Environment  
Bureau of Air and Radiation

Tiffany Campbell  
Missouri Department of  
Natural Resources  
Air Pollution Control Program

September 12, 2006

# Overview

---

- Ground level ozone
- KC Region ozone history
- Form of standard
- Future activities
- 8-hour ozone maintenance plan
- Contingency measures

# Ground Level Ozone

---

- Chemically identical to upper atmosphere ozone
- Caused by chemical reaction of volatile VOCs and NO<sub>x</sub>
- Concentrations higher when conditions are hot, sunny with light winds
- VOCs and NO<sub>x</sub> from cars, trucks, small businesses, utilities & large industry
- Can trigger breathing problems, esp in those with respiratory conditions

# KC Region Ozone History

---

- From mid-1970s through early 1990s, KC did not meet 1-hour ozone standard
- In 1992, area was redesignated attainment for ozone standard
- Area violated ozone standard in mid-1990s
- Area has met the 1-hour standard in 2000s

# 8-Hour Ozone Standard History

---

- EPA issued standard in 1997
- Court challenge delayed implementation
- 8-hour averaging period better accounts for prolonged exposures
- 8-Hour standard = 0.084 ppm (84 ppb)

# 8-Hour Ozone Standard Determination

---

- Design Value for a Metropolitan Statistical Area is the highest value from any site
- Three year average of the fourth highest daily maximum
- Violation occurs if three-year average exceeds 84 ppb
- Kansas City would have violated standard in mid-80s, 90s, 2000 & 2002

# Variables in the KC Ozone Equation

---

- Weather
- Emission Reductions/Increases
  - Clean Air Interstate Rule
  - Tier 2 Vehicle and fuels rule
  - Heavy Duty Diesel rule
  - Regional Haze rule
  - Voluntary programs
  - Flint Hills burning emissions

# Consequences of Nonattainment Designation

---

- RACT rules
- LAER review for NSR permits
- Transportation plan conformity with SIP
- Curtails economic development
- Enhanced emissions inventory
- Additional photochemical modeling
- SIP preparation
- Enforce new rules to reduce emissions
- Potential sanctions for failure to meet standard
- **Citizens breathing polluted air**

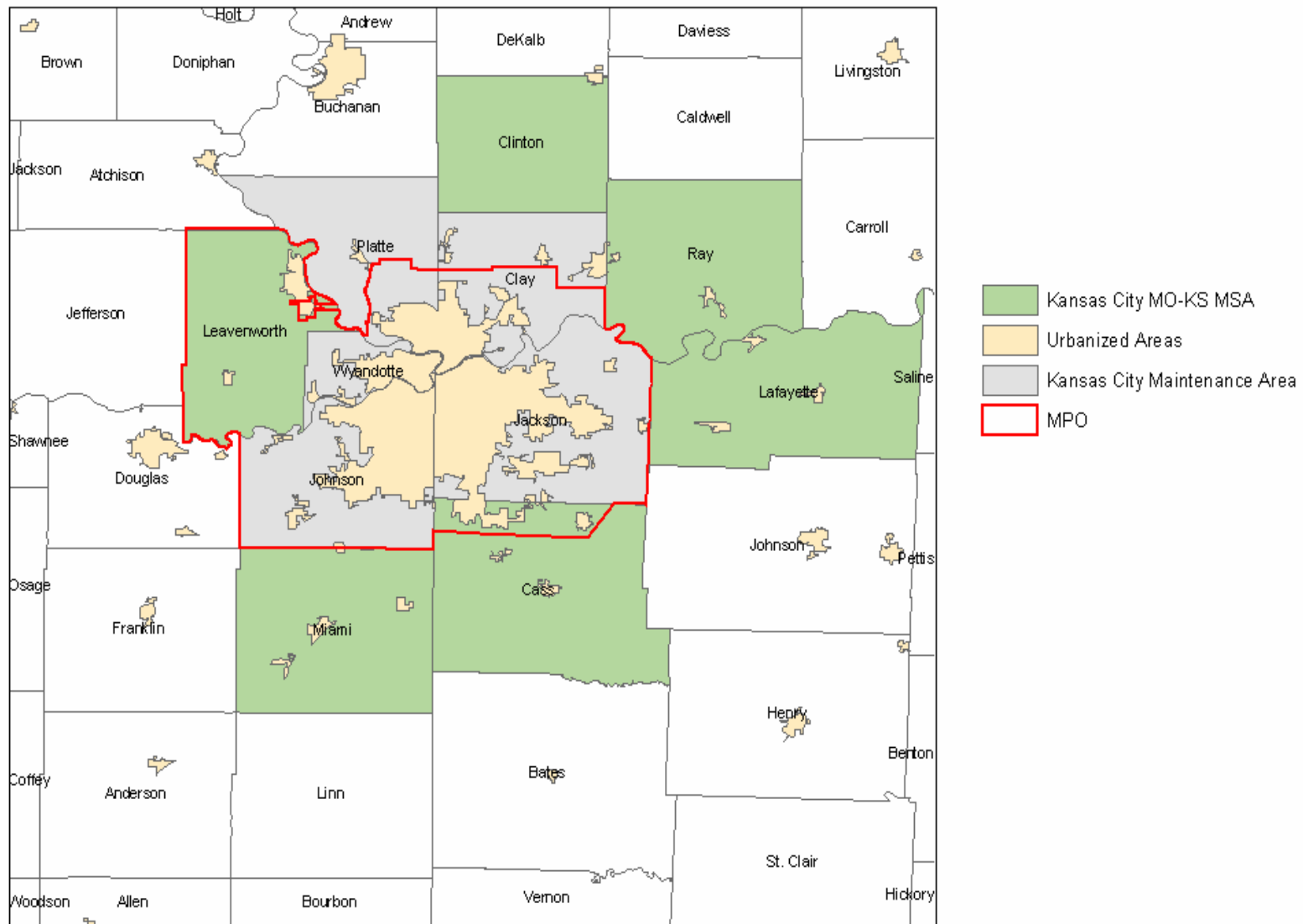


# Nonattainment Designation Process

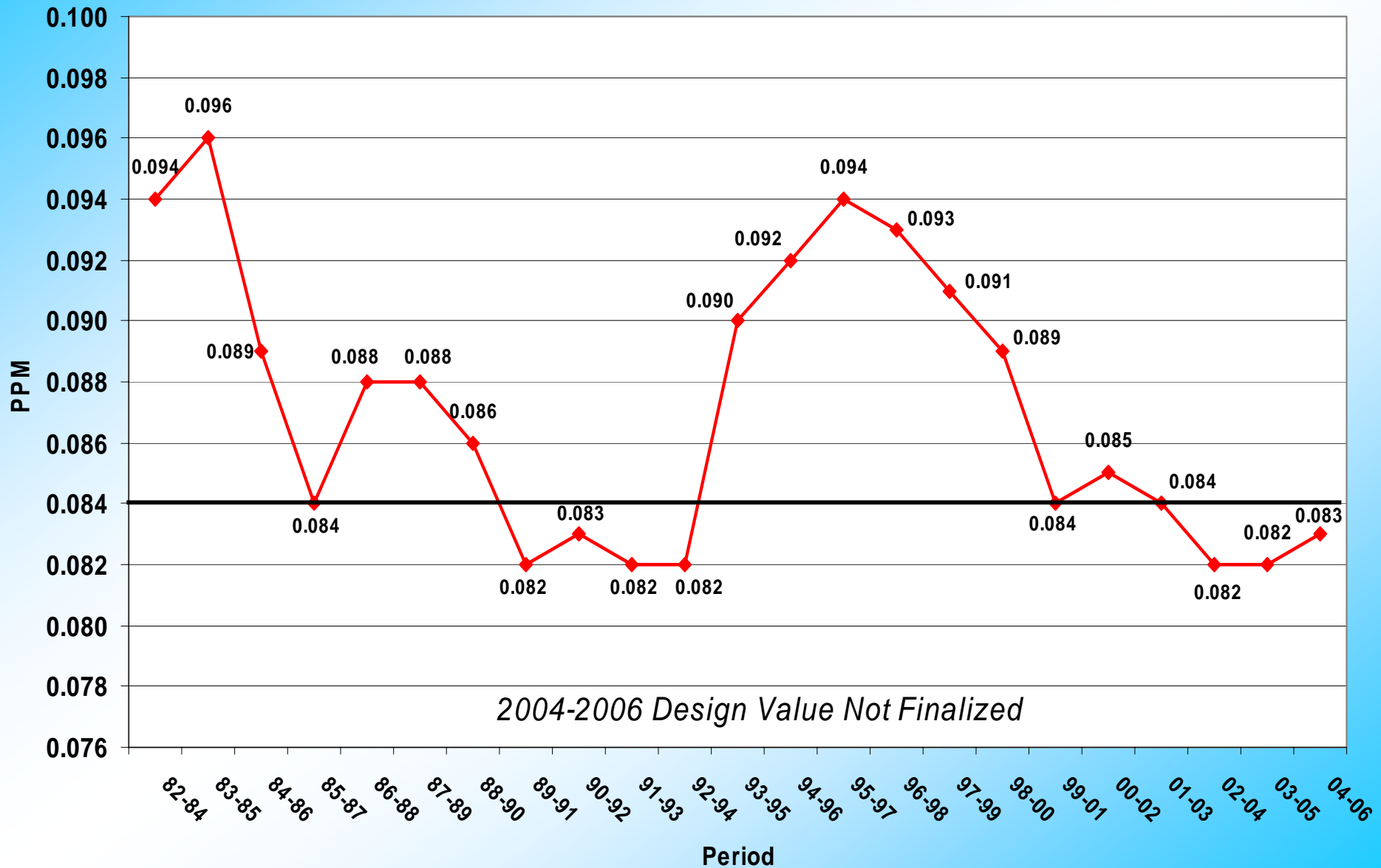
---

- Governor's recommendation to EPA
- EPA reviews recommendation and offers preliminary decision
- States provide comments
- EPA makes final decision
- State Implementation Plans due
- EPA guidance defaults to Metropolitan Statistical Area - Counties affected:
  - KS -Miami, Linn, Franklin and Leavenworth
  - MO - Cass, Ray, Clinton, Lafayette

## Kansas City Region Boundaries: MSA, MPO, Maintenance Area and Urbanized Areas



# 8-Hour Ozone Design Values Kansas City



# Are We Critical Yet?

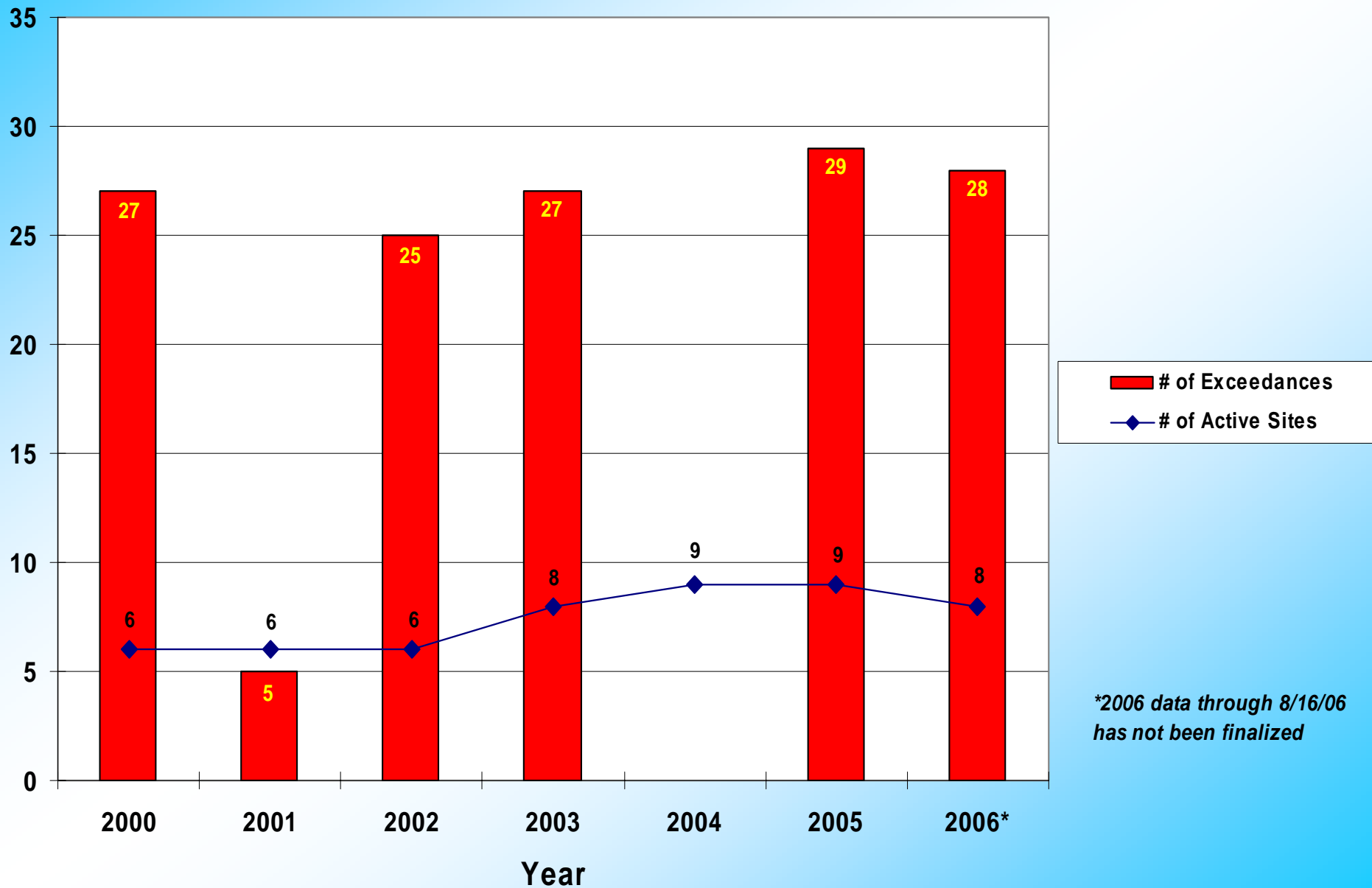
8-Hour Ozone Monitoring Data for Kansas City					
Site	4th High (ppm)			Design Value	Critical Value
	2004	2005	2006*	04-06*	2007**
JFK	0.063	0.079	0.081	0.074	0.094
Heritage Park	0.066	0.081	0.076	0.074	0.097
Leavenworth	0.067	0.077	0.073	0.072	0.104
Liberty	0.071	0.088	0.092	0.083	0.074
Rocky Creek	0.069	0.087	0.087	0.081	0.080
Richards Gebauer-South	0.061	0.081	0.078	0.073	0.095
Trimble	0.071	0.087	0.083	0.080	0.084
Watkins Mill	0.067	0.079	0.091	0.079	0.084

\*2006 data are current through 8/15/06 and have not gone through final QA/QC

\*\*4th high must be equal to or lower than this value for the three-year average (design value)  $\leq 0.084$  ppm.

# Kansas City

## 8-Hour Ozone Exceedances



# Current Status

---

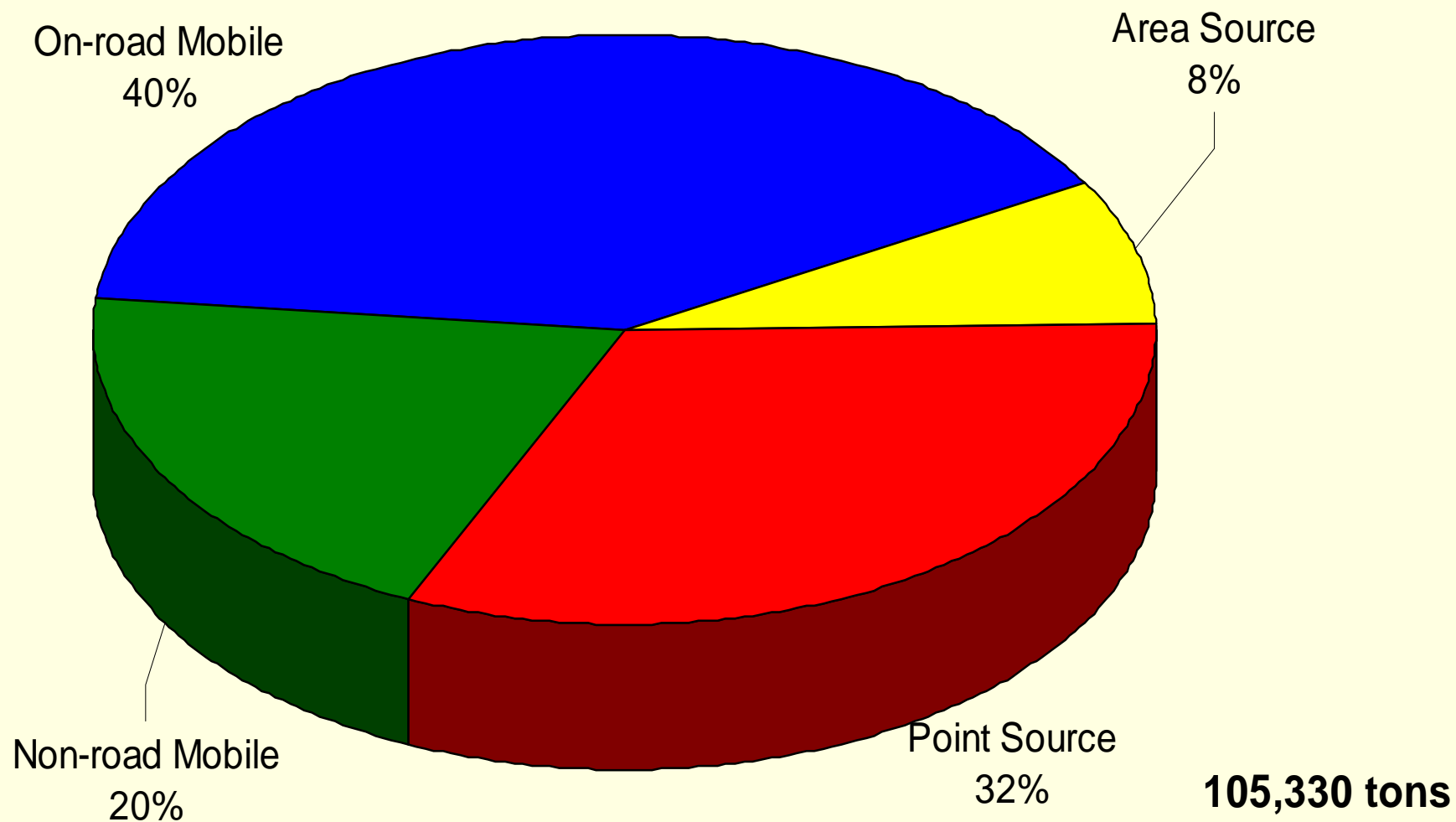
- EPA designated region attainment in May 2005
- Largely a fluke of the weather – record cool summer in 2004
- 2005 ozone season was above average
- 2006 ozone season is above average so far

# Emissions Source Categories

---

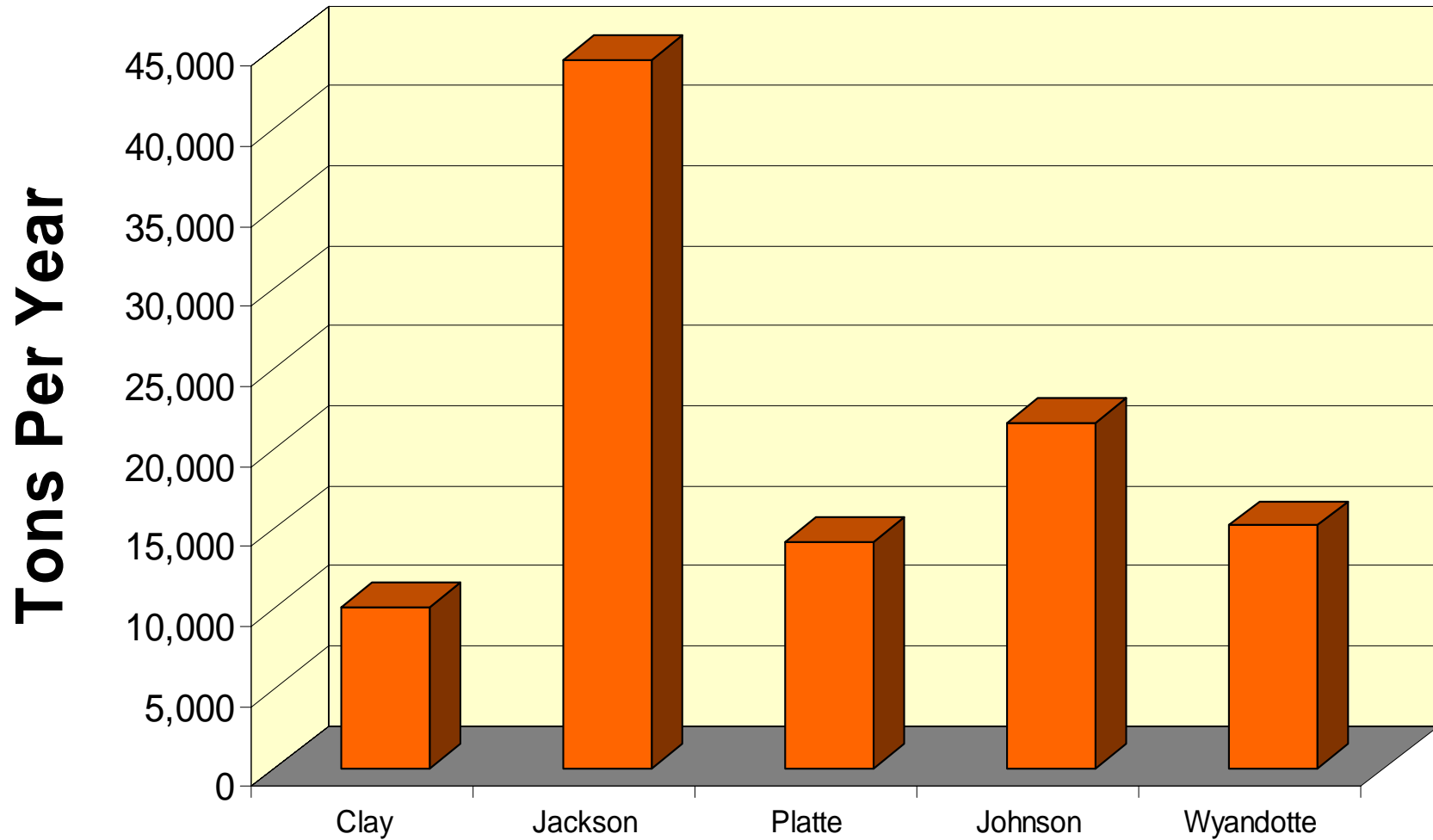
- **Point:** Permitted sources of pollutant emissions.
- **Area:** Sources below the permit cutoffs: dry cleaners, auto body painting, house painting and solvent use.
- **Mobile On-road and Off-road:** autos, trucks, planes, trains, construction, farm equipment & lawn and garden equip.

# 2002 Kansas City Area NOx Emissions

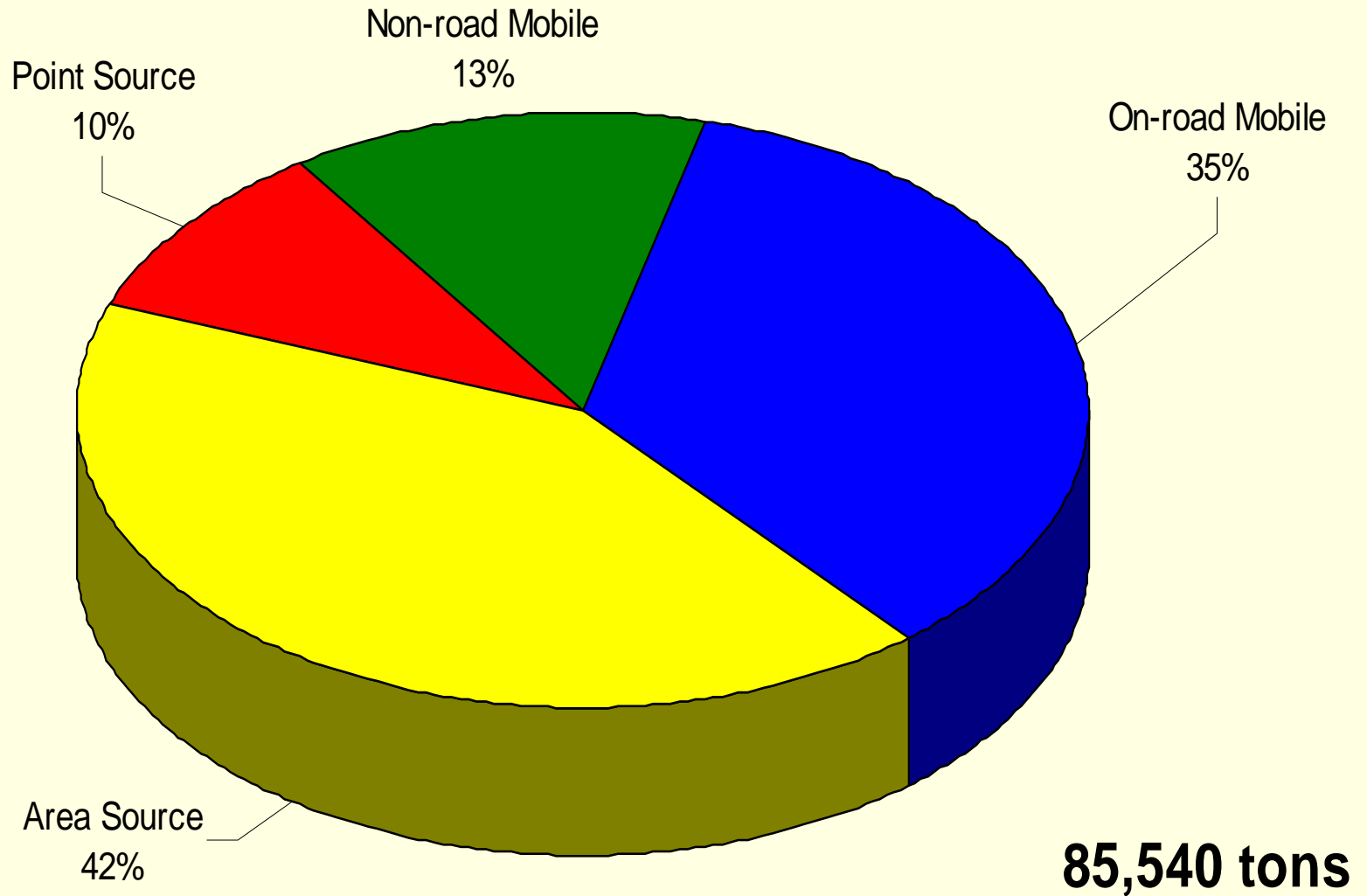




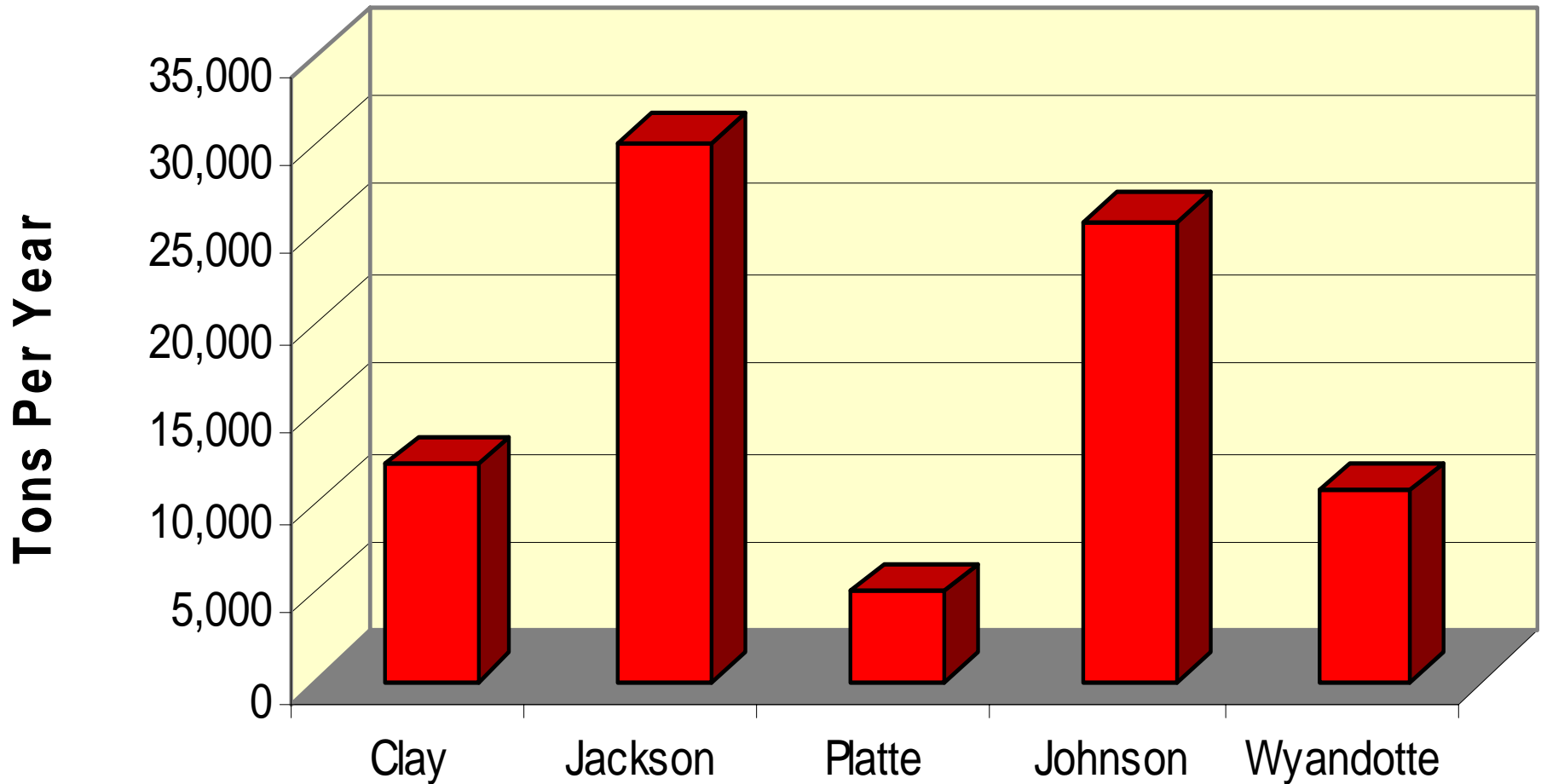
# 2002 Total NOx Emissions by County



# 2002 Kansas City Area VOC Emissions



# 2002 Total VOC Emissions by County



# Emission Reduction Strategies

---

- NOx point sources
- Voluntary programs
- Reduce vehicle miles traveled
- Diesel retrofit and idle reduction
- Railroad emission reductions

# Clean Air Action Plan

---

- Coordinated by MARC
- Developed in 2004
- Comprehensive voluntary plan for reducing emissions
- Targets both stationary and mobile sources
- Short-, intermediate- and long-term measures

# Area Source Reduction Programs

---

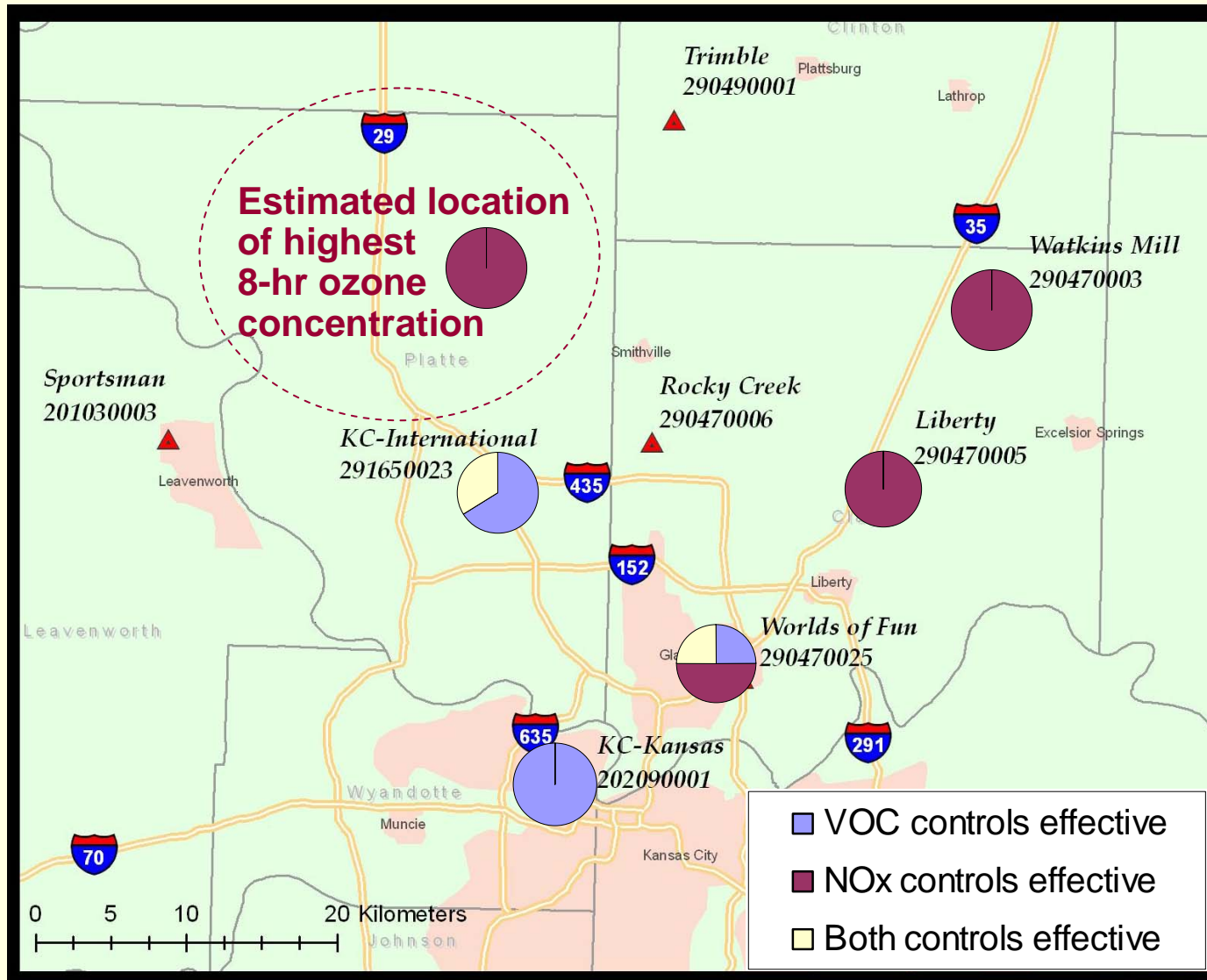
- Solvent metal cleaning rule
- Technical Seminars
  - Lawn and Garden
  - Printing
  - Painting
  - Solvent metal cleaning

# Mobile Source Reduction Programs

---

- Low RVP gasoline
- Gasoline tank truck vapor testing
- Ozone alerts
- Bus RideShare
- Gas cap testing programs
- Employee carpool incentive program
- AirQ workplace initiative

# Effectiveness of VOC and NO<sub>x</sub> Controls





# Future Activities

---

- Another episode of photochemical modeling
- Implement voluntary strategies
- Prepare 8-hour maintenance plan
  - Inventory growth and comparison
  - Modeling results
  - Monitoring results
  - Contingency measures and triggers